

## THRESHOLD LIMIT VALUES OF AIRBORNE CONTAMINANTS FOR CONSTRUCTION—Continued

Substance	CAS No. <sup>d</sup>	ppm <sup>a</sup>	mg/m <sup>3</sup> <sup>b</sup>	Skin Designation
Zinc oxide .....	1314–13–2	—	15	—
Total dust .....		—	5	—
Respirable fraction ...		—	5	—
Zirconium compounds (as Zr) .....	7440–67–7	—	5	

MINERAL DUSTS		<sup>h</sup> [Reserved]
Substance	mppcf <sup>(i)</sup>	<sup>i</sup> [Reserved]
<sup>j</sup> Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.		
<sup>k</sup> The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.		
SILICA:		<sup>l</sup> [Reserved]
Crystalline		<sup>m</sup> Covers all organic and inorganic particulates not otherwise regulated. Same as Particulates Not Otherwise Regulated.
Quartz. Threshold Limit calculated from the formula .....	250 <sup>(k)</sup>	The 1970 TLV uses letter designations instead of a numerical value as follows:
	%SiO <sub>2</sub> +5	A <sup>1</sup> [Reserved]
Cristobalite.		A <sup>2</sup> Polytetrafluoroethylene decomposition products.
Amorphous, including natural diatomaceous earth .....	20	Because these products decompose in part by hydrolysis in alkaline solution, they can be quantitatively determined in air as fluoride to provide an index of exposure. No TLV is recommended pending determination of the toxicity of the products, but air concentrations should be minimal.
SILICATES (less than 1% crystalline silica)		A <sup>3</sup> Gasoline and/or Petroleum Distillates. The composition of these materials varies greatly and thus a single TLV for all types of these materials is no longer applicable. The content of benzene, other aromatics and additives should be determined to arrive at the appropriate TLV.
Mica .....	20	E Simple asphyxiants. The limiting factor is the available oxygen which shall be at least 19.5% and be within the requirements addressing explosion in part 1926.
Portland cement .....	50	
Soapstone .....	20	
Talc (non-asbestiform) .....	20	
Talc (fibrous), use asbestos limit .....	--	
Graphite (natural) .....	15	
Inert or Nuisance Particulates: <sup>(m)</sup>	50 (or 15 mg/m <sup>3</sup> whichever is the smaller) of total dust <1% SiO <sub>2</sub>	
[Inert or Nuisance Dusts includes all mineral, inorganic, and organic dusts as indicated by examples in TLV's Appendix D]		
Conversion factors.		
mppcf × 35.3 = million particles per cubic meter = particles per c.c.		

## Footnotes

<sup>1</sup> [Reserved]<sup>2</sup> See Mineral Dusts Table.<sup>3</sup> Use Asbestos Limit § 1926.58.<sup>4</sup> See 1926.58.

\* The PELs are 8-hour TWAs unless otherwise noted; a (C) designation denotes a ceiling limit.

\*\* As determined from breathing-zone air samples.

<sup>a</sup> Parts of vapor or gas per million parts of contaminated air by volume at 25 °C and 760 torr.<sup>b</sup> Milligrams of substance per cubic meter of air. When entry is in this column only, the value is exact; when listed with a ppm entry, it is approximate.<sup>c</sup> [Reserved]<sup>d</sup> The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than one metal compound, measured as the metal, the CAS number for the metal is given—not CAS numbers for the individual compounds.<sup>e–f</sup> [Reserved]<sup>g</sup> For sectors excluded from § 1926.1128 the limit is 10 ppm TWA.

[39 FR 22801, June 24, 1974, as amended at 51 FR 37007, Oct. 17, 1986; 52 FR 46312, Dec. 4, 1987; 58 FR 35089, June 30, 1993; 61 FR 9249, 9250, Mar. 7, 1996; 61 FR 56856, Nov. 4, 1996; 62 FR 1619, Jan. 10, 1997]

## § 1926.56 Illumination.

(a) *General.* Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination intensities listed in Table D–3 while any work is in progress:

TABLE D–3—MINIMUM ILLUMINATION INTENSITIES IN FOOT-CANDLES

Foot-candles	Area or operation
5 .....	General construction area lighting.
3 .....	General construction areas, concrete placement, excavation and waste areas, accessways, active storage areas, loading platforms, refueling, and field maintenance areas.

TABLE D-3—MINIMUM ILLUMINATION INTENSITIES  
IN FOOT-CANDLES—Continued

Foot-candles	Area or operation
5 .....	Indoors: warehouses, corridors, hallways, and exitways.
5 .....	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading.)
10 .....	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, barracks or living quarters, locker or dressing rooms, mess halls, and indoor toilets and work-rooms).
30 .....	First aid stations, infirmaries, and offices.

(b) *Other areas.* For areas or operations not covered above, refer to the American National Standard A11.1-1965, R1970, Practice for Industrial Lighting, for recommended values of illumination.

#### § 1926.57 Ventilation.

(a) *General.* Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations shall not exceed the limits specified in §1926.55(a). When ventilation is used as an engineering control method, the system shall be installed and operated according to the requirements of this section.

(b) *Local exhaust ventilation.* Local exhaust ventilation when used as described in (a) shall be designed to prevent dispersion into the air of dusts, fumes, mists, vapors, and gases in concentrations causing harmful exposure. Such exhaust systems shall be so designed that dusts, fumes, mists, vapors, or gases are not drawn through the work area of employees.

(c) *Design and operation.* Exhaust fans, jets, ducts, hoods, separators, and all necessary appurtenances, including refuse receptacles, shall be so designed, constructed, maintained and operated as to ensure the required protection by maintaining a volume and velocity of exhaust air sufficient to gather dusts, fumes, vapors, or gases from said equipment or process, and to convey them to suitable points of safe disposal, thereby preventing their disper-

sion in harmful quantities into the atmosphere where employees work.

(d) *Duration of operations.* (1) The exhaust system shall be in operation continually during all operations which it is designed to serve. If the employee remains in the contaminated zone, the system shall continue to operate after the cessation of said operations, the length of time to depend upon the individual circumstances and effectiveness of the general ventilation system.

(2) Since dust capable of causing disability is, according to the best medical opinion, of microscopic size, tending to remain for hours in suspension in still air, it is essential that the exhaust system be continued in operation for a time after the work process or equipment served by the same shall have ceased, in order to ensure the removal of the harmful elements to the required extent. For the same reason, employees wearing respiratory equipment should not remove same immediately until the atmosphere seems clear.

(e) *Disposal of exhaust materials.* The air outlet from every dust separator, and the dusts, fumes, mists, vapors, or gases collected by an exhaust or ventilating system shall discharge to the outside atmosphere. Collecting systems which return air to work area may be used if concentrations which accumulate in the work area air do not result in harmful exposure to employees. Dust and refuse discharged from an exhaust system shall be disposed of in such a manner that it will not result in harmful exposure to employees.

(f) *Abrasive blasting—(1) Definitions applicable to this paragraph—(i) Abrasive.* A solid substance used in an abrasive blasting operation.

(ii) *Abrasive-blasting respirator.* A respirator constructed so that it covers the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive.

(iii) *Blast cleaning barrel.* A complete enclosure which rotates on an axis, or which has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts to the action of an automatic blast spray.

(iv) *Blast cleaning room.* A complete enclosure in which blasting operations are performed and where the operator